

Begin

Reel # 447

Privezentseva, A.G.

DUBROV, N.F.; GORLACH, I.A.; PRIVALOV, S.S.; SHAYEVICH, A.B.; SHUBINA, S.B.

At the Urals Research Institute of Ferrous Metals. Stal' 22  
no.9:812, 854 S '62. (MIRA 15:11)  
(Ural Mountain region--Metallurgical research)

KHOREV, V.N.; BARANOVA, N.A.; GORLACH, I.A.; KVASOV, Ye.I.; KRAMARENKO, I.S.;  
MITRONOV, L.V.; PRIVALOV, S.S.; LYASKO, M.V.; DUBROV, N.F.;  
MITRONOV, L.V.; KOKSHEAROVA, T.K.; MIKHALEV, M.S.; AZAREV, R.M.;  
KUZNETSOVA, I.R.; LAPKIN, N.I.; KRASIL'NIKOV, P.A.; GOL'DSTEYN, M.I.;  
GUTERMAN, S.G.; ODINGKOV, Yu.I.; SERYABIN, N.P.; KORSHCHIKOV, V.D.

Research by the Ural Ferrous Metal Research Institute. Stal'  
22. 1962, 621, 623, 638-639, 670 J1 '62. (MIRA 15:7)  
(Metallurgical research)

S/133/62/000/007/011/014  
A054/A127

AUTHORS: Mironov, L.V.; Privalov, S.S.; Lyasko, M.V.

TITLE: At the Ural'skiy nauchno-issledovatel'skiy institut chernykh metallov  
(Ural Scientific Research Institute of Ferrous Metals)

PERIODICAL: Stal', no. 7, 1962, 638

TEXT: In co-operation with the MMK and ChMZ the grain structure and magnetic properties of transformer steel were investigated. The amount of impurities and gases can be reduced by combining the smelting and oxidizing processes, by maintaining optimum electrical and temperature conditions during smelting and by intensifying the refining process. Shortening the oxygen blowing period to 10 minutes reduces the oxygen content of the metal and improves the magnetic properties. Tests of the effect of cold rolling conditions on the growth of grains and the recrystallizing texture of transformer steel showed that secondary crystallization and development of a perfect texture can be attained at given reductions. Beyond a certain value of reductions - which depends on the smelting technology - the magnetic properties of the steel deteriorate and fine grains without texture

Card 1/2

At the Ural'skiy....

S/133/62/000/007/011/014  
AO54/A127

appear. The optimum reduction values for the second rolling were determined. To prevent sticking together of the sheets during annealing, hydrate of magnesium oxide should be applied instead of talcum. If the sheets are degreased and oxidized prior to coating them with hydrate of magnesium oxide, their sticking can be prevented and the magnetic properties of transformer steel sheets up to 0.35 mm thick equal those of E320-E330 (E-320-E330) grades [according to ГОСТ 802-58 (GOST 802-58)].

end 2/2

S/133/61/000/005/001/009  
A033/A133

AUTHORS: Dubrov, N.F.; Gorlach, I.A.; Privalov, S.S.

TITLE: At the Zhdanovskiy metallurgicheskiy institut (Zhdanov Metallurgical Institute). Investigating the smelting process of transformer steel in the electric furnace [in cooperation with the Chelyabinskiy i Verkh-Isetskiy metallurgicheskiy zavod (Chelyabinsk and Verkh-Isetsk Metallurgical Plants)]

PERIODICAL: Stal', no. 5, 1961, 403

TEXT: The technological conditions of obtaining transformer steel with a minimum of impurities have been investigated. Adding to the charge up to 6% iron ore and up to 3% lime (of the weight of the metal charge) ensures an Mn-content not exceeding 0.10% and a Cr-content of 0.003%. The reduction of the Mn-content in the metal is accompanied by an increase of the coefficient of chromium distribution between slag and metal. To decrease the C-content to 0.03 - 0.04% it is necessary to blow through the bath with pure oxygen not containing nitrogen and moisture. A rapid reduction of the sulfur content of steel can be achieved by: alloying the metal with silicon at the beginning of the refining period, by the

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At the Zhdanovskiy metallurgicheskiy institut...

S/133/61/000/005/001/009  
A033/A133

presence of liquid foamy slag containing not more than 1.5 - 2.0% FeO in the bath prior to tapping, and by an intensive stirring of the metal with the slag during the pouring of the melt into the ladle. During the silicon-alloying of the melt at the beginning of the refining period, the nitrogen content of the steel does not exceed 0.005 - 0.007% which increases to 0.007 - 0.010% during alloying at the end of this period. The utilization of magnesium-silicon for the final de-oxidation contributes to a decrease in the oxygen content by 15 - 20%. [Abstract-er's note: Essentially complete translation].

Card 2/2

GORLACH, I.A.; PRIVALOV, S.S.; MATYUGIN, A.S.; KVASOV, Ye.I.

Effect of heat treatment on the plasticity and magnetic properties  
of an iron alloy with 16% aluminum. Metalloved. i term. obr. met.  
no.11:8-10 N '63. (MIRA 16:11)

1. Ural'skiy nauchno-issledovatel'skiy institut chernoy  
metallurgii.

FOFANOV, A.A., kand. tekhn. nauk; GAVRILYUK, L.Ya., inzh.; DUBROV, N.F.;  
GORLACH, I.A.; PRIVALOV, S.S.

New developments in research. Stal' 21 no. 5: 402-403, 414 My '61.  
(MIRA 14:5)

(Ural Mountains--Metallurgical furnaces)  
(Zhdanov--Blast furnaces)

AUTHOR: Karlinskiy, M.M. and Privalov, V.A. 121-2-9/20

TITLE: Choice of the grinding angles of a screw cutting tool for laminated plastic materials (Vybor uglov zatochki rez'don-areznogo instrumenta dlya sloistyykh plastmass)

PERIODICAL: "Stanki i Instrument" (Machine Tools and Tools), 1957, No.2, pp. 29 - 31 (U.S.S.R.)

ABSTRACT: Cutting tools tested in the tool laboratory of the "Ural-elektroapparat" plant are described. A tool geometry with the top flank in the form of a 'V' groove has given satisfactory results for a depth of cutting up to 0.5 mm both in laminated plastic materials (including laminated wood) and in certain metals, such as aluminium alloys. A 'V' angle of  $45^{\circ}$  has been found best. Flat top flanks with a large negative rake are suitable for laminated plastics up to a cutting depth of 0.15 mm. The advantage of a negative rake is shown in principle with reference to the tangential reaction force. In laminated materials, the resultant should be directed to compress the layers. Formulae are given to compute the tool profile angle so as to obtain the correct thread profile retaining the centre setting of the tool. The geometry of thread milling cutters and of taps intended for plastic material is illustrated.

1/2 There are five figures.

Choice of the grinding angles of a screw cutting tool for  
laminated plastic materials. (Cont.) 121-2-9/20

AVAILABLE:

2/2

10. Unrecorded Sales - Sales made by the company but not recorded in the books of account.

6

PRIVALOV, V.V., dotsent, kandidat tekhnicheskikh nauk.

Electric power circuits for electric locomotives. Elek. i tepl.  
tizing no. 4:33-34 Ap '57. (MIRA 10:6)  
(Electric locomotives)

137, 1958-3-4739

Translation from: Referativnyi zhurnal, Metallurgiya, 1958, Nr 3, p 39 (USSR)

AUTHORS: Privalov, S. I., Timofeyev, V. N., and Kosikov, B. A.

TITLE: Reduction of Ore in a Layer (Vosstanovleniye rudy v sloye)

PERIODICAL: Vses. nauch.-issled. inst. metallurg. teple. i Byul. nauchno-tekhn. inform., 1957, Nr 4, pp 95-112

ABSTRACT: A study of the reduction process of ore in a stationary layer. In contrast to the blast furnace process, the RP in the laboratory setup was not stationary. Ore-bearing spherical briquets (8 to 10 mm in diameter) prepared from Vysokogorsk iron concentrate containing 62.4-66 percent Fe, were charged in amounts of 1.34-1.45 kg (a layer 160 mm high) into a cylindrical reaction container 80 mm in diameter and 312 mm high. A gas composed of 9.4-10.8 percent  $O_2$ , 30-33 percent  $CO$ , and 0.7-0.8 percent  $H_2$ , with a humidity up to 0.05 percent, was heated to 750°, 800°, 850°, and 900°, and then passed through the container at velocities ranging from 0.25 m/sec to 1.1 m/sec. Samples of gas were drawn from every 40-mm section of the layer; the temperature was controlled by means of thermocouples located near the base of the upper and lower

Card 1-2

137-1958-3-4739

# Reduction of Ore in a Layer

layers. By analyzing the gas samples, the degree of reduction,  $\phi$ , was determined by the following formula:  $\phi = (S \cdot V \Delta CO_2) / (G_{O_2} \cdot \tau)$ , where  $V$  is the gas consumption per unit of time,  $\tau$  is the time, and  $G_{O_2}$  is the  $O_2$  content of ore. At all temperatures the RP increases with increasing gas flow velocities and decreases with increasing degree of reduction. It was discovered that in the RP, the ore pellets (particularly those made of pure  $Fe_2O_3$ ) undergo a growth in volume (swelling), especially at the higher temperatures. A dimensionless coefficient of the RP of ore in a layer,  $K$  ( $m^3 \cdot min^{-1} \cdot cm^{-2}$ ), representing a rate of speed, is defined, and methods for its determination are given. It is pointed out that the magnitude of  $K$  decreases significantly with increasing  $\phi$  and that it increases continuously and almost linearly as a function of increasing temperatures and velocities of the gases (in the temperature range between 750° and 910°).

L. Kh.

Card 4-2

USSR-MIL

1447- P.1

19 Nov 60

PRIVALOV, V., Lt Gen Army,  
is the author of an article written in connection with  
Artillery Day.

Ekonomicheskaya Gazeta, 19 Nov 60

26  
(1)  
28

PRITALOV, A. (Pamir)

Time to file in business, 1954, 1955, 1956, 1957, 1958, 1959.

(MIRA 17:34)

(Farber Province--Renting of equipment, etc.)

As a result, the model is able to capture the temporal dependencies between the input and output sequences. The model is trained using a loss function that measures the difference between the predicted and actual output sequences. The model is trained using a dataset of input and output sequences, and the training process involves iteratively adjusting the model parameters to minimize the loss. The model is then evaluated using a separate dataset to assess its performance. The model's performance is measured using metrics such as accuracy, precision, and recall. The model is able to capture the temporal dependencies between the input and output sequences, and the training process involves iteratively adjusting the model parameters to minimize the loss. The model is then evaluated using a separate dataset to assess its performance. The model's performance is measured using metrics such as accuracy, precision, and recall.

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North Pole (Scientific Expeditions)

**APPROVED FOR RELEASE: 06/15/2000**

**CIA-RDP86-00513R001343110001-7"**

Members of the Communist Youth League should be air pilots. Grazhd.  
av. 18 no.1:29 Ja. '61. (MIRA 14:3)  
(Communist Youth League) (Air pilots)



0000-4-33/62

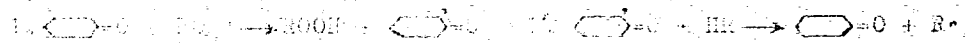
1. Study of the oxidation of cyclohexanone in the liquid phase. Oxidation of cyclohexanone in the liquid phase (see also Vyrzhikovskiy, N. V. and Tikhonovskiy, A. I. Zh. fiz. khim. 1961, 35, 1009-1012).

Sobolev, M. A. and others. Zh. fiz. khim. 1961, 35, 1009-1012 (98).

The authors studied the oxidation process of cyclohexanone during oxidation of cyclohexanone in the liquid phase. The carefully purified cyclohexanone was oxidized with air under a pressure of 10-15 atmospheres at 140°, 170° and 197° in a steel container. In the oxidation mixture, cyclohexanone, cyclohexanone and cyclohexanone radicals were found quantitatively (see 2). The kinetic curves of the oxidation at 170° and those of cyclohexanone are given in Figure 1 at all three temperatures. It was found that the reaction of cyclohexanone with air to oxidize cyclohexanone to the former of which was marked as cyclohexanone. The cyclohexanone group. Subsequently cyclohexanone was found in the mixture and after precipitation of cyclohexanone from the mixture, cyclohexanone was found in the

0000-4-33/62

On the basis of the results of the study, the following conclusions were drawn. In the oxidation of cyclohexanone, cyclohexanone radicals, cyclohexanone radicals, and cyclohexanone radicals are formed. The reaction of cyclohexanone with air to oxidize cyclohexanone to the former of which was marked as cyclohexanone. The cyclohexanone group. Subsequently cyclohexanone was found in the mixture and after precipitation of cyclohexanone from the mixture, cyclohexanone was found in the



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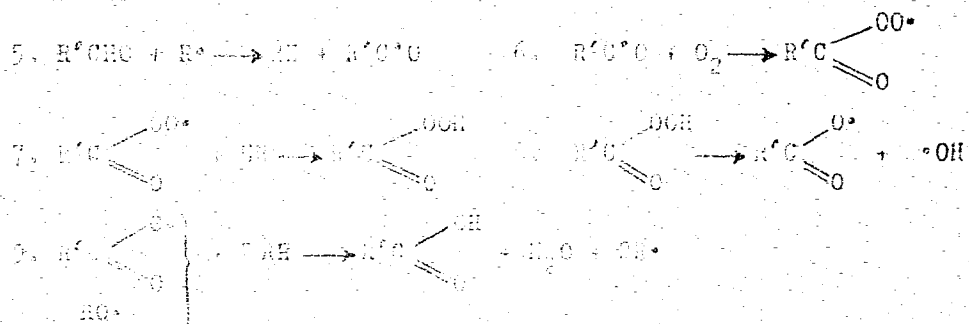


On the basis of the results of the study, the following conclusions were drawn. In the oxidation of cyclohexanone, cyclohexanone radicals, cyclohexanone radicals, and cyclohexanone radicals are formed. The reaction of cyclohexanone with air to oxidize cyclohexanone to the former of which was marked as cyclohexanone. The cyclohexanone group. Subsequently cyclohexanone was found in the mixture and after precipitation of cyclohexanone from the mixture, cyclohexanone was found in the

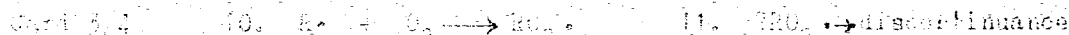
Radical Branching Mechanism in the  
Oxidation of Cyclohexanone and Other Ketones

357/36-100-1 43/62

acylhydroperoxide which decomposes at once, thus forming 2 new radicals:



The sequence of reactions 1-9 is so rapid that there are no measurable quantities of hydroperoxide of cyclohexanone, of the monoaldehyde of adipic acid and of peradipic acid in the system. As a result of all these questions it was found that instead of the used up radical  $ROO^{\bullet}$  three new radicals are forming which may react with oxygen:



Dependence Branching Mechanism in Liquid Phase  
 Polymerization of Cyclohexanone in a Steel Catalyst

SOV/70-126-4-33/62

The velocity of the modification is given by the velocity of equation (2), which practically proceeds from left to right. If, however, there are no modifications, the velocity of modification is smaller than the velocity of the reaction of cyclohexanone. The velocity of modification of cyclohexanone, according to the above given mechanism, is of second order which is in good agreement with experimental data. The calculated value of the experimentally found activation energy (21 kcal/mole) agrees well with the character of the elementary reaction. There are 2 figures, 2 tables, and 2 references, 2 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova  
 (Moscow State University named M. V. Lomonosov)

TRANSMITTED: January 29, 1959, by G. N. Solov'ev, Academician

RECEIVED: January 27, 1959

1959 4/4



TIKHONOV, V.A.; SERDYUK, N.P.; SAPUTO, M.P.; GORISHNIY, Ya.I.; VOROB'YEV,  
N.P.; GUNDEILOVICH, A.A.; PRITALOV, N.G.; MARIN, V.I.;  
LEVCHENKO, N.G.

The best in the profession: Put' i put'khoz. 6 no.12:4-9, 11,  
15-17 '62. (MIRA 16:1)

1. Zamestitel' nachal'nika Petrozavodskoy distantzii puti  
Okt'yabr'skoy dorogi (for: Tikhonov).
2. Nachal'nik Solvychevodskoy  
distantzii Severnoy dorogi (for: Serdyuk).
3. Nachal'nik  
Shekhterskoy distantzii puti Yugo-Zapadnoy dorogi (for: Saputo).
4. Nachal'nik Kotovskoy distantzii puti, Odesskoy dorogi (for  
Gorishniy).
5. Nachal'nik Sverdlovsk-Passazhirskoy distantzii  
puti Sverdlovskoy dorogi (for: Vorob'yev).
6. Nachal'nik  
L'govskoy distantzii puti Moskovskoy dorogi (for: Marin).
7. Zamestitel' nachal'nika Shar'inskoy distantzii Severnoy dorogi  
(for: Levchenko).

(Railroads--Employees)

AVINOV, B.A.; PRIVALOV, V.D.

Mechanizing the patching of aerial photographs. Inform. Seko.-seko.  
Inform. Gos. natsh.-inst. inst. natsh. 1969. Inform. 18 no.3:  
12-14. Mr 169. (HRA 18:5)



LOV, V. V., kandyd. tekhn. nauk; CHERNOV, R. V., inzh.

Design of a system for automatic control of wheel slippage.  
Vestn. NIIP. No. 18-20 '64. (MIRA 17:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut inzhenerov zheleznodorozhnogo transporta.

SO Vecheryaya Moskva  
Sum 71

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PRIVALOV, V.V., kandidat tekhnicheskikh nauk.

Basic methods of testing resistance to vibration in frames of  
engine-driven streetcars. Trudy MEMIT no.62:225-244 '53.

(MLRA 7:12)

(Electric railroads--Cars--Vibration)

PRIVALOV, V.V., dotsent, kandidat tekhnicheskikh nauk; KHOMENKO, A.I.,  
kandidat tekhnicheskikh nauk.

Principles of traction engine operation. Elek. i tepl. tiaga  
no.2:36-40 F '57. (MLRA 10:5)  
(Locomotives)

PREVIEW, T.V.

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... ..

PRIVALOV, V.V., dotsent, kandidat tekhnicheskikh nauk.

Electric locomotive control circuit diagram. Elek.i tepl.tiaga  
no.5:29-34 My '57. (MIRA 10:7)

(Electric locomotives)

GARNICHEV, D.A.; GOLOVANOV, V.A.; KRYLOV, S.S.; KURASOV, S.I.;  
OSIPOV, S.I.; PRIVALOV, V.V.; RADONOV, N.I., inzh.,  
retsenzent; SIDOROV, N.I., inzh., red.; VASIL'YEVA, N.N.,  
tekhn. red.

[Electric locomotive with semiconductor rectifiers] Elek-  
trovoz s poluprovodnikovymi vypriamiteli. Moskva,  
Transzheldorizdat, 1963. 98 p. (MIRA 17:1)

PRIVALOV, V.V., kand.tekhn.nauk; KONDRAT'YEV, A.I., inzh.; KHATKEVICH, G.N.,  
inzh.

Reply to the inquiries of our readers. Elek. i tepl. tiaga 7  
no.6:37 Je '63. (MIRA 16:9)  
(Electric locomotives) (Railroads--Brakes)  
(Railroads--Signaling)

GARNICHEV, D.A.; GOLOVANOV, V.A.; KNYLOV, S.S.; KURASOV, S.I.;  
OSIFOV, S.I.; PRIVALOV, V.V.; RADICHOV, N.I., inzh.,  
retsenzent; SILEOROV, N.I., inzh., red.; VASIL'YEVA, N.I.,  
tekhn. red.

[Electric locomotive with semiconductor rectifiers] Elektro-  
voz s poluprovodnikovymi vypriamiteliami. Moskva, Transzhel-  
dorizdat, 1963. 98 p. (MIRA 16:12)

(Electric locomotives)

(Electric current rectifiers)

PRIVALOV, V.V., kand. tekhn. nauk; CHERNOV, R.V., inzh.

Methodology for studying the tendency of electric locomotives  
to slip. Vest. TSNII MPS 22 no.4:23-25 '63. (MIRA 16:8)

1. Vsesoyuznyy zaochnyy institut inzhenerov zheleznodorozhnogo  
transporta.

(Electric locomotives--Testing)

ZAKHARCHENKO, D.D., kand. tekhn. nauk; NEKRASOV, V.I., kand. tekhn. nauk; PLAKS, A.V., kand. tekhn. nauk, dots.; PRIVALOV, V.V., kand. tekhn. nauk; TREYMUNDT, N.D., kand. tekhn. nauk; VISIN, N.G., kand. tekhn. nauk, retsenzent; KUCHMA, K.G., kand. tekhn. nauk, retsenzent; FAMINSKIY, G.V., kand. tekhn. nauk, retsenzent; KALININ, V.K., kand. tekhn. nauk, red.; VOROTNIKOVA, L.F., tekhn. red.

[Automation of electric rolling stock control systems] Avtomatizatsiia sistem upravleniia elektricheskim podvizhnym sostavom. Moskva, Transzheldorizdat, 1963. 214 p. (MIRA 16:7)  
(Electric railroads--Electronic equipment)

IV.IV, V.V., kant. tekhn. nauk

Why can't counter-current be used on d.c. powered electric locomotives? Elek. i topl. tiazn. no. 5:42 My '61.

(MIRA 14:7)

(Electric locomotives)

BUSSE, Ye.L., mashinist; PRIVALOV, V.V., dotsent, kand.tekhn.nauk

What causes the wearing out of safety devices at high traffic speed  
on an electric section? Elek.i tepl.tiaga. 4 no.2:41-42 F '60.

(MIRA 13:6)

1. Elektrosektsiya depo Bezymyanka, Kuybyshevskoy dorogi (for Busse).  
(Electric contactors)

KONDRASHEV, F.S., inzh.; LYAPIN, D.P., inzh.; PRIVALOV, V.P., inzh.

Stoping without miners. Bezop.truda v prom. 4 no.1:12  
Ja '60. (MIRA 13:5)

(Coal mines and mining)

PRIVALOV, V.V., kand.tekhn.nauk; RUJAYA, K.I., kand.tekhn.nauk

Answers to readers' questions. Elek.1 tepl.tiaga 3 no.5 42-43  
My '59. (MIRA 12:9)

(Locomotives)

PRIVALOV, V.V., kand. tekhn. nauk, dots; KHOMENKO, A.I., kand. tekhn. nauk.

Electricity and its laws. Elek. i tepl. tiaga no.1:38-41 '57.

(MIRA 12:3)

(Electric railroads)

PRIVALOV, V.V., kand. tekhn. nauk

Answers to readers' questions. Elek. i tepl. tiaga 2 no. 2:44 P '58.  
(Electric railway motors) (MIRA 11:4)

PRIVALOV, V.V.

CHUVERIN, Yu.I., kand.tekhn.nauk; PRIVALOV, V.V., kand.tekhn.nauk.

Answers to readers' questions. Elek.i tepl.tiaga no.10:43-44 0 '57  
(MIRA 10:11)

(Electric railroads)

ACCESSION NR: AP4040294

S/0057/64/034/006/0953/0960

AUTHOR: Golant, V.Ye.; Krivosheyev, M.V.; Privalov, V.Ye.

TITLE: Investigation of a hot cathode discharge in a magnetic field

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.6, 1964, 953-960

TOPIC TAGS: plasma, gas discharge, discharge plasma, impulse discharge, ion density, argon plasma, plasma-magnetic field interaction

ABSTRACT: The charged particle density in a hot cathode argon discharge was investigated at pressures from 0.001 to 1 mm Hg and currents up to 25 A in the presence of a longitudinal magnetic field of 2500 Oe or less. A brief theoretical discussion is also given, based on the work of I.Langmuir and L.Tonks (Phys.Rev.33,954,1929; 34,876,1929), which leads to expressions for the ion density in the two limiting cases that the ion mean free path is long or short, respectively, compared with the dimensions of the apparatus. The discharge took place in a 6 cm diameter glass tube between a 4 cm diameter molybdenum anode and a directly heated spiral tungsten cathode located 20 cm from it. The emitting surface of the cathode was 0.5 cm<sup>2</sup>. A 3 mm long 0.3 mm diameter molybdenum probe was provided on the axis of the tube to

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ACCESSION NR: AP4040294

measure the ion density. The charged particle density was also determined from the attenuation of microwaves, focused with elliptical reflectors. The ratio of the probe ion current to the ion density was determined from the microwave measurements at densities below the critical value. This ratio was assumed to remain constant at higher densities and was used to determine the ion density from the probe current. The apparatus was operated under steady state conditions at currents up to 2 A and was pulsed at higher currents. Preliminary experiments with He, A and Xe showed that, in agreement with the theory, the ion density increased with ion mass under otherwise similar conditions. The ion density was approximately proportional to the total current. For fixed current, the ion density increased with decreasing cathode temperature; this is a consequence of the increasing fraction of the cathode current carried by ions. In the absence of the magnetic field, the ion density for fixed current increased monotonically with the pressure. With the magnetic field present, the ion density reached a maximum at a pressure between 0.01 and 0.1 mm Hg and decreased at higher pressures. The pressure for maximum ion density increased with increasing magnetic field, and the decrease in density at higher pressures is ascribed to loss of ions to the walls by transverse diffusion. At 25 A and 2500 Oe the rising portion of the experimental ion density versus pressure curve agreed with the theo-

Card 2/3

ACCESSION NR: AP4040294

retical curve within about a factor of 2. This agreement can be considered satisfactory. For fixed current the ion density rose rapidly with increasing magnetic field. Ion densities of the order of  $10^{15} \text{ cm}^{-3}$  were attained, which correspond to a degree of ionization of several tenths. "In conclusion, the authors express their deep gratitude to V.A.Yermakov, who participated in some of these investigations." Orig.art.has: 14 formulas and 7 figures.

ASSOCIATION: Leningradskiy politekhnicheskii institut im. M.I.Kalinina (Leningrad Polytechnic Institute)

SUBMITTED: 15Jun63

DATE ACQ: 18Jun64

ENCL: 00

SUB CODE: ME

NR REF SOV: 003

OTHER:003

Card 3/3

PRIVALOV, V. Ye.

SOV/68-58-9-9/21

AUTHORS: Potashnikov, M.M. (Candidate of Technical Science) and Privalov, V. Ye.

TITLE: ~~The Problem of the~~ Utilisation of Naphthalene Containing Raw Material (Problema ispol'zovaniya naftalinsoderzh-ashchego syr'ya)

PERIODICAL: Koks i Khimiya, 1958, Nr 9, pp 36-39 (USSR)

ABSTRACT: In view of the increasing demand for naphthalene for organic synthesis a more rational utilisation of existing naphthalene resources is discussed. At present the recovery of naphthalene amounts to about 50%. The efficiency of two methods of naphthalene recovery: 1) crystallisation of naphthalene fraction and pressing, and 2) rectification of the naphthalene fraction, are compared. The authors calculated that the latter method permits increasing the naphthalene recovery from the naphthalene fraction by about 50%. Further increase of

Card 1/2

SOV/68-58-9-9/21

The Problem of the Utilisation of Naphthalene containing Raw Material

naphthalene recovery can be obtained by an improvement of processes of dehydration and rectification of coal tar, which however is not considered in the paper.

There are 1 figure and 5 references, all Russian.

ASSOCIATION: Nizhne-Tagil'skiy metallurgicheskiy kombinat (Nizhne-Tagil'skiy Metallurgical Combine)

Card 2/2

SOV/68-59-3-11/23

AUTHOR: Privalov, V. Ya.

TITLE: Tube Crystalliser for Napthalene Fraction (Trubchatyy kristallizator dlya naftalinovoy fraktsii)

PERIODICAL: Koks i Khimiya, 1959, Nr 3, pp 46-49 (USSR)

ABSTRACT: A new type of crystalliser for the naphthalene fraction, designed by the author and already in operation for a long time on the Nizhniy Tagil Works is described. The crystalliser consists of a cylindrical vessel filled with tubes, closed at one end with the other end rolled into a round plate which forms the top flange of the vessel (fig 1). Tubes are filled with the hot naphthalene fractions while cooling water is passed through the space between the tubes. At the end of the crystallising period the flow of cooling water is cut off and the water remaining in the crystalliser is emptied. The crystalliser is turned 180° and steam is passed into the space between the tubes for 3 minutes. When the tube walls become hot, the crystallised naphthalene fraction falls out of the tubes in the form of cores (fig 2) which are passed into the press mixer. The duration of the crystallisation

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process in tubes of various diameters and the dependence of the throughput of a crystalliser on the diameter of the tubes are given in tables 1 and 2 respectively. Characteristic data on the processes of pressing naphthalene fractions crystallised in the tube crystallisers are given in table 3. Two tube crystallisers of dimensions shown in fig 1 replaced 5 mechanical crystallisers and two drum coolers with a considerable economy in the consumption of power and cooling water. There are 2 figures and 3 tables.

ASSOCIATION: N. Tagil'skiy Metallurgicheskiy Kombinat  
(N.- Tagil Metallurgical Combine)

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PRIVALOV, V. Ye, Cand Tech Sci — (diss) "Investigation of the separation and utilization of coal tar naphthalene," Sverdlovsk, 1960, 16 pp, 150 cop. (Ural Polytechnical Institute in S. M. Kirov, Chair of Chemical Technology of Fuel) (KL, 44-60, 131)

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AUTHORS: ~~Privalov, V. Ye.~~ Potashnikov, M.M.. Cherkasova, L.M.,  
and Cherkasov, N.Kh.

TITLE: Production of "Distilled Naphthalene" for the  
Manufacture of Phthalic Anhydride.

PERIODICAL: Koks i Khimiya, 1960, No. 7, pp. 50-56 (U.S.S.R.)

TEXT: The development of a new method of producing naphthalene suitable for the manufacture of phthalic anhydride is described. It is pointed out that the naphthalene for the above purpose could contain those compounds which do not interfere with the production of anhydride (methylnaphthalenes, thionaphthene) and free from organic non-volatile residues, ash and unsaturated compounds. Of the latter, unsaturated compounds are particularly harmful as their polymerisation products cause choking of air-naphthalene mixture pipe-lines in the anhydride plant. A study of the content of unsaturated compounds and non-volatile organic residue in naphthalene raw and finished products, summarised in Table 1, indicated that even in crystalline naphthalene the  
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content of unsaturated compounds amounted to 0.33-0.45%. A study of the distribution of unsaturated compounds in the process of pressing naphthalene (Table 2) indicated that the main part of unsaturated compounds is transferred into the filtrate. The transformation of unsaturated compounds in various naphthalene products into non-volatile residue was investigated by retaining various naphthalene products in laboratory at 20°C over a period of one month and determining periodically the content of naphthalene, unsaturated and organic non-volatile residue (Table 3). The results obtained indicate a slow transfer of unsaturated compounds into resins. The process will be obviously much faster under oxidising conditions and elevated temperatures prevailing in the air-naphthalene pipe lines of an anhydride plant. The authors proposed to produce "distilled naphthalene" by redistilling washed naphthalene fraction. The washing process consists of treatment with 20% sodium hydroxide, 25% sulphuric acid and 93-94% concentrated acid with subsequent neutralisation with a 20%

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sodium hydroxide. In this way the main part of phenols is extracted, nitriles saponified and unsaturated compounds are polymerised. On subsequent redistillation the organic non-volatile residue including the products of polymerisation and mineral admixtures are left in still residues and the distillate will consist mainly of naphthalene and methylnaphthalenes. The method was tested on laboratory and industrial scales. The results of laboratory experiments are shown in table 4 and of industrial production in tables 5 and 6. The washing scheme in the industrial production was as follows: purification of dephenolised and depyridinised fraction from unsaturated was done with 93.5% sulphuric acid: mixing of the fraction with acid - 1 hour (stirring by bubbling air) settling 30 minutes, washing with hot water - 30 minutes. The results obtained indicated that with about 5% (by weight) of concentrated acid the main content of unsaturated compounds was removed. The wash losses amounted to 3-4% and included not only losses due to sulphonation of naphthal-

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ene but also due to the removal of residual phenols, bases and partially unsaturated compounds. The yield of "distilled naphthalene" depends on the design of the still, i.e., on the amount left in the still. In laboratory experiments it amounted to 95.3% and in industrial - to 93.5% of the washed fraction. Nevertheless the overall yield of naphthalene in respect of its content in the washed naphthalene fraction amounted to 100% (6.6% of methylnaphthalenes). The production of phthalic anhydride from "distilled naphthalene" was tested on laboratory and industrial scales with satisfactory results. A comparison of industrial results of manufacture of phthalic anhydride from crystalline and "distilled" naphthalene is given in table 7. The yield of phthalic anhydride calculated on pure naphthalene was somewhat higher (about 0.8%) from "distilled" naphthalene due to the presence of methylnaphthalenes. It is considered that the proposed technology of treatment of naphthalene fraction is simpler than the existing methods and permits a maximum possible utilisation of

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Production of "Distilled Naphthalene" for the Manufacture of  
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naphthalene raw materials. There are 7 tables and 5 references,  
all Soviet.

ASSOCIATION: N.-Tagil'skiy metallurgicheskiy kombinat  
(N.-Tagil' Metallurgical Combine)

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E071/E435

**AUTHORS:** Rus'yanova, N.D., Gofman, M.V., Gordeyeva, Z.K.,  
Privalov, V.Ye., Zubok, A.M. and Khomutinkin, G.V.

**TITLE:** Production of High Percentage Phenanthrene

**PERIODICAL:** Koks i khimiya, 1961, No.7, pp.48-52

**TEXT:** It was recently established that phenanthrene can be used for the production of diphenic acid (a raw material for high quality plastics and resins) and 9-10 phenanthrene quinone (a valuable fungicide) but a technology for its production on coke-oven by-product plants was not available. The authors carried out an investigation in order to establish the most suitable starting raw material and operating equipment and practice for the production of phenanthrene fraction from which a high percentage (above 90%) phenanthrene can be obtained. As about 80% of phenanthrene in tar is concentrated in the anthracene oil, the latter was considered as the most suitable starting material. Calculations of the necessary column efficiencies for the separation of the pair phenanthrene-carbazole were carried out for a fraction containing 27% of phenanthrene and 2% carbazole (anthracene oil obtained from Card 1/6

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the first anthracene fraction) and for a fraction containing 25% of phenanthrene and 11% of carbazole (a mixture of anthracene oil and the second anthracene fraction). The results indicated that the first type of raw material can be rectified on a column equivalent to 17 theoretical plates into an 80% phenanthrene fraction, while in order to obtain a similar product from the second type of raw material, a column equivalent to 50 theoretical plates would be necessary. Laboratory distillations of the above two raw materials as well as of the first anthracene fraction and raw anthracene were carried out on a column equivalent to 25 theoretical plates. The results of these laboratory distillations showed that the optimum raw material for the production of a concentrated phenanthrene fraction is anthracene oil. The laboratory results were checked on an industrial scale in the by-product plant of the Nizhne-Tagil Metallurgical Combine. A mixture of anthracene oil from the first and second anthracene fractions, containing 24% of phenanthrene, 11% of carbazole and 3% of anthracene was used for the experiments. The oil was washed with a 15% alkali and 25% acid. Rectification of the

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washed oil (29.5 tons) was done on a column 1 m in diameter with 33 bubble cup trays. The collection of the fractions was done from a side outlet on the 27th plate. During the rectification two fractions were collected: first up to 320°C (a light fraction) and the second, phenanthrene fraction 320 to 345°C (25.5% of the charge). This contained 80% of phenanthrene, 8% of carbazole and 7.7% of anthracene. All together 84.97% of phenanthrene was recovered in the fraction. It is considered that a vacuum distillation would be more suitable. The required efficiency of the column for the separation of the pair phenanthrene-carbazole for a raw material containing 11% of carbazole under various pressures was calculated. On the basis of the above investigations, the following technological scheme for the production of phenanthrene fraction is proposed: anthracene oil washed from phenols and bases is heated in a pipe furnace to 280°C and passed into the first column equivalent to 18 to 20 theoretical plates. The light fraction is collected at the top, while the residue from the bottom is passed into a second column equivalent to 25 to 28 theoretical plates. The phenanthrene fraction is collected

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from the top of this column while a part of the residue from the bottom is utilized as a heat carrier, i.e. it is passed into the tube furnace, where it is again preheated and returned to the second column. Both columns operate under a vacuo at 100 mm Hg. The production of high percentage phenanthrene from the phenanthrene fraction was also tested. The fraction contains anthracene, carbazole and various oils (mainly a mixture of methyl homologues of fluorene, phenanthrene and anthracene). Phenanthrene used for further oxidation should be freed from carbazole and resinous substances. It was established that on treatment of phenanthrene fraction with 85% sulphuric acid at 35 to 50°C, phenanthrene is not sulphonated but a carbazole sulphate is obtained which, after separation of the acid layer, can be recovered by dilution of the latter with water (to an acid concentration of 50 to 55%). The treatment removes also resinous substances. This was as follows: the fraction was dissolved in xylene 1:2 or benzene 1:3 and treated with 85% sulphuric acid at 25 to 50°C. The consumption of acid depends on the concentration of carbazole. At a content of 2 to 3%, one

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washing with 5 vol.% of sulphuric acid for 15 minutes is sufficient. With a carbazole content of 8 to 10%, 2 to 3 washings, each time with fresh acid, are necessary. After the treatment with sulphuric acid the product usually contained not more than 0.2 to 0.3% of carbazole. After distilling off the solvent and a redistillation of the fraction to remove oils, it was pressed at 100 to 120 atm. A 90 to 92% product, melting at 91 to 93°C with an 80% yield was obtained. The main admixture was anthracene. Some laboratory tests (not described) indicated that the product is suitable for the production of diphenic acid. Under industrial conditions, a product melting at 92 to 94°C was obtained. After a single recrystallization from alcohol (1:5), phenanthrene melting at 99 to 100°C was obtained. There are 1 figure, 6 tables and 13 references: 8 Soviet-bloc and 5 non-Soviet-bloc. The work of L.D.Gluzman (Ref.6: Koks i khimiya, 1959, No.2) is mentioned. The references to English language publications read as follows: R.E.Dean, E.N.White, D.McNeil, J.Appl.Chem., 1953, 3, 10, 469; V.N.Kamat, J.de Sa, F.Fernandes, J.Sci.Ind.Res. 1956, 15, p.8; U.S.Patent 2575314, C.A., 1952, 8152.

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ASSOCIATIONS: Ural'skiy politekhnicheskiy institut (Ural  
Polytechnical Institute) (Rus'yanova, N.D.,  
Goftman, M.V. and Gordeyeva, Z.K.);  
VUKhIN (Privalov, V.Ye.);  
Nizhne-Tagil'skiy metallurgicheskiy kombinat  
(Nizhne-Tagil Metallurgical Combine) ( Zubok, A.M.  
and Khomutinkin, G.V.)



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2. Vostochnyy uglekhimicheskii institut (for Yerkin, Ryvkin,  
Privalov).
3. Nizhne-Tagil'skiy metallurgicheskii kombinat  
(Mustafin, Kuznetsov, Zorokhovich).  
(Coke)